2/15/08 - 00696

Comments
Site 21 Remedial Investigation Report
St. Juliens Creek Annex
Chesapeake, Virginia

GENERAL COMMENTS

1. Please insert data on MCL's, Region 3 RBC's, or other risk action levels as appropriate on all tables.

2. The RI Report does not include a well-defined presentation of source areas, which may be contributing to or may have contributed to the volatile organic compound (VOC) contamination in groundwater. Of greatest concern is the general lack of soil analytical data to better define potential source areas. Section 2.3 describes previous investigations at the site; however, it appears that only limited surface soil sampling was conducted. According to Table 2-4, only six surface soil samples were collected within the Site 21 area. Although some subsurface samples were collected during this RI, their locations and the analyses conducted on these samples were also limited. Section 5.2, Refinement of Potential TCE Source Areas, describes three areas at which trichloroethylene (TCE) concentrations were reported, yet there were no historical records indicating use of TCE in the nearby buildings. Soil data are also lacking at these areas. These areas are identified as follows: 1) North of Building 47; 2) South of Demolished Building 54; and 3) Building 46 Area. Therefore, additional soil sampling may be necessary. Please revise the RI Report to provide plans to further investigate these potential source areas.

3. Several sections of the RI Report, including Table 2-1, mention a soil removal action for former Building 249 (IR Site 9/14) prior to construction of Building 1556. Very few details on this removal action have been provided. The volume of soil removed and the depth of the excavation are not described (although the boundaries of the removal excavation appear to be shown on Figure 2-3). It is also noted that no soil samples were collected during this removal action (Page 2-3). Without post-excavation confirmatory soil sampling, it is not clear how effective the removal action was at removing site contaminants. To aid in the interpretation of the existing data, please revise the RI Report to provide further details on the soil removal action for former Building 249 (IR Site 9/14). Also, describe the basis for the no further action status for this site, referencing supporting documents as appropriate. At a minimum, the collection of soil samples may be necessary to define residual soil contamination levels and ensure that source areas do not remain.

4. Field reports for the storm water, surface water, and groundwater sampling and temporary well installations have not been appended to the RI Report. These field reports may contain information that is not necessarily described in the RI Report, but may aid in interpretation of the data. Please revise the RI Report to include the field reports for all sampling and temporary well installation activities.

5. The boundaries of the TCE plume appear to be delineated, in part, by groundwater data collected from temporary wells. For example, no permanent monitoring wells exist

southwest of monitoring well MW13S. Additionally, there are no permanent wells in the vicinity of temporary well TW122, located in the southeast portion of the site, or upgradient of the plume, north of permanent wells MW17S and MW18S. Additional data will be necessary from permanent monitoring wells so that the plume can be evaluated over time since groundwater samples from temporary wells are not of sufficient data quality for making final remedial decisions, as they have not been sufficiently developed nor are they reproducible data points. Additionally, data from permanent well points can be used to evaluate degradation processes and rates of degradation for volatile constituents. Please revise the RI Report to address how the boundaries of the plume will continue to be monitored via permanent wells. Additionally, please provide the proposed locations of permanent wells to be installed in those locations that will require ongoing monitoring.

6. Several monitoring wells have been sampled multiple times. However, the RI Report does not include a discussion of observed contaminant trends nor does it include isoconcentration maps depicting contaminant concentrations over time. This type of discussion/evaluation may help refine the conceptual site model, assist in the placement of permanent wells to be used to monitor the groundwater in the future, and aid in the development of potential remedies for the site. Please revise the RI Report to include a discussion of observed contaminant trends over time for those wells for which data are available. Also, please describe what data needs will be necessary to develop a more thorough understanding of the temporal variations in the contaminant plumes.

7. The RI Report discusses the use of three sampling approaches implemented for collection of depth specific groundwater samples, but does not include a discussion of the results, or a recommendation for the proposed approach for collection of depth specific groundwater samples in the future. Please revise the RI Report to include an assessment of these data.

8. The RI Report only includes data for one deep monitoring well. Based on the lack of contaminant trend data, the need for additional deep monitoring wells needs to be addressed as a data gap within the RI Report. Please revise the RI Report to allow for the installation of additional deep groundwater wells, or provide adequate justification for why additional deep groundwater wells are unnecessary.

9. The RI Report discusses the collection of groundwater samples via a peristaltic pump. Please revise the RI Report to clarify what sampling technique was used for collection of groundwater samples via a peristaltic pump. In the future, EPA recommends using the "Straw Technique" or the glove thumb over the tubing and draining technique as described in EPA Region 4 *Environmental Investigations Standard Operating Procedures and Quality Assurance Manual* (EI SOP QAM, November 2001) Section 7.3.3 to collect VOC samples, and the semi-volatile organic compounds (SVOCs) and metals should be collected using a vacuum jug assembly as described in EPA Region 4 EI SOP QAM Section 7.3.3.

10. It is not clear why there are two separate tables to select COPCs for shallow groundwater under the "Construction Excavation and Tap Water" exposure point scenario presented in Table 2.4, and the "Construction Excavation and Shower" exposure point scenario presented in Table 2.5. Both tables compare contaminant concentrations in shallow groundwater to Region 3 tapwater risk-based screening concentrations. It appears that this disconnect could be addressed by a brief summary of anticipated exposure scenarios and a discussion of the

exposure assumptions that were considered in the derivation of the risk based screening criteria that are being used. For clarity, this discussion should be included in the section on the identification of COPCs. This may also eliminate the need to have two tables to screen COPCs for the "Construction Excavation and Tap Water" exposure point scenario and the "Construction Excavation and Shower." Please revise the HHRA to address the above concerns.

11. The COPC selection tables, included in Appendix H as Tables 2.1 through 2.5, appear to include background concentrations for several volatile contaminants, including acetone, TCE, cis-1,2-dichloroethylene (DCE), and others. A note included on these tables indicates that background values are for the Columbia aquifer, and that the upper tolerance limit (UTL) detected results were used for total metals. A complete source for these background values is not provided in the tables. Furthermore, the HHRA has not provided any information on the calculation of background for these organic constituents. Please revise the HHRA to include a complete reference for the Appendix H tables for the background values referenced. Additionally, please further describe the process by which background values for organic constituents were calculated.

12. Indoor air concentrations used in the risk assessment were modeled from groundwater concentrations using the Johnson and Ettinger Model (1991); however, it was previously noted that EPA does not find the model applicable to Site 21. EPA originally expressed concern with use of this model in the comments on the *Draft Indoor Air Vapor Evaluation Addendum to Work Plan for Additional Groundwater Delineation Activities at Site 21.* EPA's original comment summarized the following points:

- The shallow groundwater depth at Site 21 (typically between 1 and 7 feet below ground surface (bgs)) limits the validity of the J&E model at this site. Although the EPA user's guide for evaluating vapor intrusion (*OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils*, November 2002) does not set a specific depth to groundwater limit for use of the model, it does state that "the model is a one dimensional analytical solution to diffusive and convective transport of vapors formulated as an attenuation factor that relates the vapor concentration in the indoor space to the vapor concentration at the source". It further states that "factors that, in our judgment, typically make the use of semi-site specific attenuation factors inappropriate include: very shallow groundwater sources (e.g., depths to water less than 5 ft below foundation level" (Page 24).

- Shallow groundwater coupled with buildings with significant openings to the subsurface (e.g., sumps, unlined crawlspaces, earthen floors) also limit use of the generic groundwater attenuation factors of the J&E model (Page 24). EPA originally noted that Building 1556 has sumps and foundational joints that would qualify as such significant openings (these factors are currently under investigation).

- Dense non-aqueous phase liquid (DNAPL) is suspected at Site 21. Although DNAPL test kits did not confirm the presence of DNAPL, Page 6-5 of the RI Report states that "the maximum concentrations of TCE detected in shallow

groundwater at Site 21 are 16,000 µg/L at SJS21-MW15S and 13,000 µg/L at SJS21-MW16S, likely indicating the presence of DNAPL." The *User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings*, dated February 2004, states that the presence of residual or free-product nonaqueous phase liquids in the subsurface precludes use of the J&E model (Page 69).

Although this HHRA does acknowledge some of the uncertainties associated with modeling air concentrations, use of the J&E model at Site 21 does not appear to be the most protective approach for evaluating the potential for vapor intrusion into indoor air at this site, given the limitations of the model and the site-specific conditions encountered at this site. Please revise the RI Report to address these concerns.

13. Surface water, soil, and groundwater samples have been collected from Site 21 yet this HHRA only quantifies risk associated with groundwater. Section 2 of the RI Report describes various risk screenings that were conducted for soil results, but none of these results have been presented. The exposure pathways evaluated in these previous risk screenings also have not been described. Furthermore, this HHRA has not presented a total site risk and total hazard index for all exposure pathways at the site. Since cancer risks from various exposure pathways are assumed to be additive, total site risk from all exposure pathways should be calculated. Please revise the HHRA to include a calculation of risk from all exposure pathways, including those associated with surface water and soil. Additional information from the previous risk screenings for soil should be provided.

14. Section 9.5 only recommends additional investigation at Building 54, based on the potential risk of vapor intrusion into this building. However, potential risk associated with inhalation of vapors from shallow groundwater for current industrial receptors exceeded EPA's recommended point of departure for carcinogenic risk (1E-06) at several of the buildings evaluated, including Building 54 (1.6E-04), Building 13 (1.3E-5), Building 47 (2.9E-5), and Building 1556 (5.8E-5) under the reasonable maximum exposure (RME) scenario (Table 7-4). Under the central tendency exposure (CTE) scenario, Building 1556 (1.8E-05) exceeded the point of departure along with Building 54 (5.1E-05). Given the uncertainties associated with the J&E model used in the evaluation as well as the CSFs used in the assessment for TCE, additional investigation of the buildings noted above may be warranted to gather site-specific data on which to refine site risks.

SPECIFIC COMMENTS

15. Table 5-4, page 3 of 9. There is an asterisk next to sample identification number SJS21-DW105-06D* although there is no asterisk definition within the legend. Please explain the relevance of the asterisk next to this sample identification.

16. Section 7.2.2, Identification of Exposure Pathways, Future Exposure Routes. A bullet should be added indicating shallow groundwater (ingestion, dermal, and inhalation from showering) were evaluated for the resident (adult and child), since this scenario is included within the assessment.

17. Section 7.2.2, Identification of Exposure Pathways, Current Exposure Routes. See previous comment.

18. Section 2.3.1, Relative Risk Ranking System Data Collection Report (CH2M HILL, 1996), Page 2-3: The RI Report indicates that the data included in Table 2-2 has not been validated. Please revise the RI Report by either validating the currently unvalidated data or providing adequate justification for why the data cannot be validated at this time.

19. Section 2.3.2, Site Screening Assessment (CH2M HILL, 2002), Page 2-3: The human health risk screening (HHRS) for Site 10 concluded that "groundwater should not be considered for further evaluation and that surface soil does not pose a concern to human health." A more detailed description of this health risk screening is necessary in order to evaluate the older data in context with the newer data presented in this RI Report. For example, the exposure scenarios that were considered during the HHRS should be described to assure that current and future receptors will be adequately protected. Additionally, the screening criteria that were utilized should be presented. Please revise the RI Report to present a more thorough description of the previously conducted HHRS for Site 10 as well as any other sites for which this screening was conducted. Site risks/hazards should be documented, and considered in the calculation of total site risks for Site 21.

20. Section 2.3.2, Site Screening Assessment (CH2M HILL, 2002), Page 2-3: It is noted that the "HHRS concluded that surface soil does not pose a concern to human health" at Site 11. However, since a detailed description of this HHRS has not been presented, it is not apparent how this conclusion was drawn. Based on the limited data presented in this RI Report, it appears that only two surface soil samples were collected in the vicinity of Site 11 (11SS01 and 18SS01). Table 2-4 shows that several polycyclic aromatic hydrocarbons (PAHs), pesticides, polychlorinated biphenyls (PCBs), and metals were detected in the two samples. Several of these constituents were detected well above the Region 3 Risk Based Concentrations (RBCs) (October 2007). For example, benzo(a)pyrene was detected in both samples above the current RBC for this constituent (22 ug/kg) under a residential land use assumption. Aroclor-1260 was also detected an order of magnitude above the RBC (319 ug/kg) in sample 11SS01 (6,100 ug/kg – which exceeded the calibration range of the sample). Additionally, lead was detected in both surface soil samples above EPA's recommended action level for residential use of 400 parts per million (ppm). It does not appear that further horizontal or vertical delineation of this contamination was conducted. Please revise the RI Report to elaborate on why further soil assessment is unnecessary for Site 11, given the contaminants detected above current RBCs. A detailed discussion of the risk screening process and data included in the risk screening is necessary.

21. Table 2-1, Historical Activities: It is noted that hydraulic fluid waste was reportedly dumped outside of Building 46 for the purpose of weed and dust control. However, Figure 2-4, Site 21 Sample Locations, appears to show that no soil samples were collected in the vicinity of this building to evaluate the potential for contamination from this historical activity. Given the identification of TCE contamination in groundwater in temporary well TW122, an investigation of this potential source area appears warranted. Please revise the RI Report to address the lack of soil analytical results in the vicinity of Building 46, and indicate how this data gap will be addressed.

22. Table 2-1, Historical Activities: The description of Building 47 (IR Site 18) mentions that acid waste was taken to a burning ground for disposal. The location of this burning

ground in relation to Building 47 and Site 21 has not been described. For clarity, please revise the RI Report to describe the location of the burning ground, and indicate whether this area has been investigation or is undergoing investigation. Furthermore, Section 2.3.2, Site Screening Assessment (CH2M HILL, 2002), Site 18- Blasting Grit and Air Compressor at Building 47, indicates that surface soil contamination was detected, but no groundwater samples were collected. This would appear to be a data gap. Please revise the RI Report to address this apparent groundwater data gap at Building 47.

23. Table 2-1, Historical Activities: The description of Building 68 indicates that waste oil was poured down a storm drain adjacent to the building. Figure 2-3 appears to show that Building 68 is located in the far southeastern corner of Site 21. Figure 2-4 shows that Building 68 is located in an area that has not been investigated (with the exception of one temporary well, TW119, approximately 90 feet north of the building). Given the historical activities at Building 68, please revise the RI Report to clarify how the Building 68 area will be adequately assessed.

24. Table 2-1, Historical Activities: The description of Building 187 (IR Site 21) indicates that the ground around Building 187 was saturated with oil during the 1981 IAS. The current state of the ground surrounding Building 187 has not been described. Also, it is not clear whether the two surface soil samples collected in the vicinity of this building (21SS01 and 21SS02) were collected within the oil-saturated area. Please revise the RI Report to clarify the status of the stained soil surrounding Building 187, and indicate whether surface soil sampling was targeted for that area.

25. Table 2-1, Historical Activities: The description of Building 249 (IR Site 9/14) indicates that herbicide tanks were rinsed in a wash pad that drained into the storm sewer adjacent to the building. However, according to the Sample Summary in Table 2-2, it does not appear that any surface soil, storm water, or groundwater samples were analyzed for herbicides. The lack of herbicide data may represent a data gap. Please revise the RI Report to clarify whether any samples were analyzed for herbicides in the Building 249 area. Also, if samples have not been analyzed for herbicides, describe plans to address this data gap.

26. Table 2-1, Historical Activities: The description of Building 46 indicates that smokeless powder was loaded into cartridges as well as having explosives present. Hydraulic fluid was also dumped outside of the building for weed and dust control. Given the detection of RDX in MW04S (down gradient of MW04S) and the historical uses of this building, EPA believes that a further investigation of the soils in and around building 46 is warranted. Please revise the RI to address this area or provide justification why it has not been addressed.

27. Section 3.2.5, Temporary Monitoring Well Installation and Sampling, Page 3-3: It is noted that the temporary wells were driven to depths of 17 to 22 feet (ft) below ground surface (bgs). The rationale for these depths is not described, and it is not immediately evident since field logs for the temporary well installations have not been provided. If the wells were installed to the top of the Yorktown confining unit, this information should be provided.

28. Section 4.3.2, Site-Specific Geologic and Hydrogeologic Framework, Page 4-4: It is noted that the potentiometric surface at Site 21 is influenced by the storm sewer line in the center of the site, but the extent of this influence is not completely apparent based on the information provided. The RI Report includes a discussion on horizontal flow, but the vertical flow of groundwater has not been described, and vertical gradients do not appear to have been calculated. Also, it is not clear that the storm sewer line's influence is as great on the eastern side of the site, particularly near wells MW06S, MW07S, and MW05S, but there does not appear to be enough data in this area to refine the groundwater flow direction (particularly southeast of MW07S). Please revise the RI Report to further describe the extent of the influence of the storm sewer system on groundwater flow. Vertical flow across the site and in the immediate vicinity of the storm sewer line should be described. If flow rates near the storm sewer line can be calculated (rather than a site-wide flow rate), this information may also be useful when developing potential remedies for the site.

29. Table 4-2, Groundwater Elevations, Page 1 of 1: A depth to groundwater measurement was not collected from monitoring well MW04S during the February 2007 monitoring event. The RI Report does not elaborate on why a groundwater level measurement was not collected from this well. Data from this well may help to refine the groundwater flow direction at the site, particularly since Figure 4-8 appears to show a lack of data in the center of the site (i.e., approximately midway between wells MW14S and MW16S). Please revise the RI Report to explain why a depth to groundwater measurement was not collected from monitoring well MW04S during the February 2007 event.

30. Section 5.1.4, Shallow Groundwater Results, Semivolatile Organic Compounds, Page 5-4: The RI Report states that bis(2-ethyl-hexyl)phthalate is a common laboratory contaminant, but the detection in question is an order of magnitude greater than the maximum contaminant level (MCL). The magnitude of the detection makes this statement inaccurate, especially since it was not qualified as being in the blanks. The fact that bis(2-ethyl-hexyl)phthalate is a common laboratory contaminant does not rule our the possibility that this contamination is site-related. Please revise the RI Report to remove this statement and address this potential localized contamination.

31. Figure 5-2, Shallow Groundwater Exceedances, VOCs: Several of the groundwater results are shown in bold blue text, but the meaning of this blue text has not been defined in the legend of the figure. Additionally, "NE" is listed as a result for several wells (MW01S, MW09S, MW02S), but the meaning of "NE" has not been defined in the legend. For clarity, please revise Figure 5-2 to properly define the meanings of all symbols, acronyms, and color-coding that is used throughout the figure.

32. Figure 5-3, Shallow Groundwater TCE Plume: Figure 5-3 does not specify which data were used to create the contour map. Several of the permanent monitoring wells depicted have been sampled multiple times, so it is unclear whether the figure depicts maximum concentrations or concentrations from a specific date in time. Please revise the RI Report to clarify which data are depicted on Figure 5-3.

33. Figure 5-5, Vinyl Chloride (VC) Plume: An asterisk in the legend notes that data from wells identified with this symbol (MW14S, MW15S, and MW16S) were not used in the figure since anomalous results with high detected limits were reported for these wells. The

description of the VC plume, presented in the last paragraph on Page 5-3, does not describe these anomalous results, and the anticipated effect they may have on delineation of VC plume. Please revise the RI Report to describe the "anomalous" results that were noted on Figure 5-5, and elaborate on the anticipated effect on the delineation of the VC plume.

34. Section 6.0, Contaminant Fate and Transport, Page 6-1: The last sentence of the first paragraph indicates that "soil is not a media of concern" at Site 21. However, it has not been adequately demonstrated that soil should not be further assessed. Previous HHRSs appear to have been based on a limited number of surface soil samples collected from a limited number of areas. Several areas where the potential for soil contamination may exist have not been fully evaluated (i.e., post-excavation area in Site 9/Site 14, Site 11, Building 46 area as well as areas where contaminant concentrations in groundwater are elevated, such as near MW16S, MW19S, MW15S). While the delineation of the groundwater plume is a major component of this RI Report, definition of any and all source areas contributing to this contamination is also a concern. Please revise the RI Report to remove the sentence that states that "soil is not a media of concern" until additional data or information can otherwise support this statement.

35. Section 6.3, Summary of Migration Pathways, Page 6-6: A major pathway of concern at Site 21 is the volatilization of contaminants, coinciding with potential vapor intrusion into indoor air. However, this migration pathway is not identified as a current primary migration pathway in Section 6.3. Please revise the RI Report to identify the volatilization of contaminants and potential vapor intrusion into indoor air as a primary migration pathway at Site 21.

36. Figure 6-1, Conceptual Site Model (CSM): The CSM figure does not include a figure number or title. Also, inhalation of groundwater vapors to indoor air is noted as a potential concern for the current/future industrial receptor on the figure yet volatilization into indoor air is not depicted or otherwise mentioned on the figure (although mechanisms such as infiltration and biodegradation are). Please revise the CSM figure so that it includes a figure number and title. Volatilization should also be shown as a contaminant fate process.

37. Section 7.2.3, Estimation of Exposure Point Concentrations, Page 7-7: It is stated that ProUCL, Version 3.0 was used to calculate the reasonable maximum exposure (RME) exposure point concentrations (EPC). A newer version of this program is available (Version 4.00.02) and should be used in subsequent revisions to this HHRA.

38. Section 7.2.3, Estimation of Exposure Point Concentrations, Page 7-9: The parameters used for the Foster and Chrostowski shower model are presented in Table 7.2 RME Supplement C and 7.6 RME Supplement B in Appendix H, but the HHRA should provide justification for selection of the specific exposure assumptions. For example, the rationale for selection of a 30 minute shower duration, 60 minute total duration in shower room, and a 10 liter per minute (l/min) shower water flow rate have not been provided. If the exposure assumptions are conservative default exposure assumptions of the model, please specify this information on the tables, and indicate why the default exposure assumptions are applicable to the site. Please revise the HHRA to provide the rationale for selection of the exposure assumptions used in the Foster and Chrostowski shower model.

39. Appendix H, Table 1, Selection of Exposure Pathways, Page 1 of 1: For exposure to tap water (deep groundwater) by a resident, dermal contact and ingestion are listed twice for the off-site child and adult receptor. The same appears to be true for exposure to tap water from shallow groundwater. Additionally, an on-site resident does not appear to have been included for these exposure scenarios. Please revise Table 1 to address why dermal contact and ingestion of shallow and deep groundwater are listed twice for both the off-site child and adult receptor and on-site receptors are not identified for these exposure pathways.

40. Appendix H, Table 2.1, Occurrence, Distribution, and Selection of Chemicals of Potential Concern (COPC): Under the Screening Toxicity Value column, "NA" is listed for both cyclohexane and acenaphthene. However, the meaning of "NA" has not been defined in the notes of the table. Please revise Table 2-1 of Appendix H to define the meaning of "NA" and any other acronyms used in the table.

41. Appendix H, Table 2.3, Occurrence, Distribution, and Selection of COPC: Table 2-3 does not specify the medium for which the selection process was conducted. Based on the monitoring well mentioned in the "Location of Maximum Concentration" column (MW01D), it appears that deep groundwater concentrations are being evaluated. Please revise Table 2.3 to indicate whether shallow or deep groundwater concentrations were evaluated.

42. Appendix H, Table 2.4, Occurrence, Distribution, and Selection of COPC, Page 2 of 2: It appears that the concentration used for screening of iron (2.6E+04 mg/kg) exceeded the screening toxicity value (2.6E+03 mg/kg); however, iron was not selected as a COPC. Instead, the rationale for contaminant deletion or selection indicates that the contaminant was below the background level (BBL). However, this approach appears to contradict that which is stated in Section 7.1.1, Data Evaluation and Selection. The first full paragraph on Page 7-3 states "A comparison of site data to background data was not used to select COPCs." Eliminating potential constituents prior to risk characterization also deviates from the approach summarized in EPA's guidance document, "Role of Background in the CERCLA Cleanup Program" (Page 6 of 13, April 26, 2002), in which the following summary is provided: "In [Risk Assessment Guidance for Superfund] RAGS, EPA cautioned that eliminating COPCs based on background...could result in the loss of important risk information for those potentially exposed, even though cleanup may or may not eliminate a source of risks caused by background levels...this policy recommends a baseline risk assessment approach that retains constituents that exceed risk-based screening concentrations. This approach involves addressing site-specific background issues at the end of the risk assessment, in the risk characterization. Specifically, the COPCs with high background concentrations should be discussed in the risk characterization, and if data are available, the contribution of background to site concentrations should be distinguished." Please revise the HHRA to include iron as a COPC based on the approach outlined in the site HHRA and EPA guidance.

43. Appendix H, Tables 3.2 through 3.5, Exposure Point Concentration Summaries: The first note on each of these tables states that the full statistics for the data are included in an appendix. This information does not appear to be appended to the document. The outputs from the ProUCL software, and any other statistical data should be appended to the RI Report as supporting documentation. Please revise the RI Report to include the outputs from the ProUCL EPC calculations, and any other statistical data calculations.

44. Table 7-2, Summary of Chemicals of Potential Concern for the Baseline Risk Assessment, Page 1 of 1: COPCs for the potential volatilization of contaminants in shallow groundwater to indoor air (industrial) are segregated by building number. The COPC selection process tables (Tables 2.1 through 2.5 in Appendix H) did not segregate COPCs by building number so it is not clear how this information was obtained. Further description of this segregation process has also not been provided in the text of the document. Additionally, considering the migratory nature of groundwater, it also does not appear appropriate to select data from specific wells for this assessment. High concentrations of groundwater may not be located in the vicinity of a particular building at present, but it may in the future. For clarity and defensibility, please revise the HHRA to document the process for selecting specific COPCs based on building numbers. The dataset which was included for each building should be identified (i.e., each sample point should be documented), and the rationale for its selection described, considering the migratory nature of groundwater.

45. Appendix E, Soil Boring Log and Monitoring Well Construction Diagrams: The boring log for boring number SJS21-MW14S indicates that a strong petroleum odor was observed in the 0.6 to 2.0 ft interval yet a soil sample was not collected from this location for laboratory analysis. Furthermore, it is not clear whether a photoionization detector (PID) reading was collected from this interval. The PID reading listed on the log appears to be for either the first 0-0.6 foot interval or the breathing zone. Please revise the RI Report to address why a soil sample was not collected from the interval at which a petroleum odor was observed. Additionally, please clarify the PID readings for this boring. It should be noted that additional investigation of soil in this area may be necessary.

46. Section 5. Nature and Extent of Contamination. VOC's: It is noted in the RI that, "TCE concentrations appear to follow groundwater flow, moving from apparent source areas to the southeast and southwest toward the storm sewer system and the Site 2 inlet."

This notation does not account for the northward extensions of the plume. All plumes seem to be migrating somewhat northward. In particular, the vinyl chloride plume seems to migrate northward with no easily identifiable source. EPA feels that there needs to be a further investigation of potential sources contributing to the northern part of the plumes or an explanation of what may account for this. Furthermore, at the northern-most part of the plume (TW217, TW207, TW210, TW211, TW215, TW214) are listed as 5U. The RRR sample 16GW02 was analyzed at 10U ug/l. The U indicates a non-detect, but the MCL for TCE is 5 ug/L. Along the same lines, Figure 5.5 (VC Plume) shows the northern most portion of the plume and eastern portions of the plume are analyzed at MCL's, or in some cases, 5 times above MCL's (GW103). EPA is concerned with detection limits that were set above MCL's. Please revise the RI to address these concerns.

Please update the VC plume to extend from MW18S to MW19S (including TW201 with a detection of 10 ug/L).

47. Appendix H, Table 3.0: Please see comment 12 addressing the Johnson and Ettinger Model.

was incorrectly grouped and presented. See comment #50.

53. Table 4.1RME, Industrial Worker. The selected, light activity, inhalation rate of 1.0 m^3/hour for the industrial worker is low. EPA recommends using a moderate activity rate of 1.6 m^3/hour.

54. Table 4.4RME, Construction Worker. An Event Time (t event) of 4 hours per event is low and does not agree with EPA's recommend t event of 8 hours/day. In addition, an Exposure Frequency (EF) of 125 days/year is also low and does not agree with EPA's recommended EF of 180 days (6 months).

55. Table 4.5RME, Construction Worker. An Exposure Time (ET) of 4 hours/day is low. EPA recommends an ET of 8 hours/day.

56. Table 6.2, Cancer Toxicity-Inhalation. Please include the California inhalation cancer slope factor for TCE within this table. See comment #50.

57. Table 7.6, 7.7, 7.8RME. The exposure point concentrations (EPC) provided within the table could not be verified since the corresponding Table 3 was not included for the shallow groundwater. Please include the corresponding Table 3 that can be used to verify EPCs within this table.

58. Table 10.5RME. The non-carcinogenic inhalation (showering) results do not agree with the results within Table 9.6RME.

48. Depth-Specific Groundwater Sampling 3.2.7: The RI states that "Groundwater samples were initially collected in 40ml unpreserved glass vials filled to 70% capacity and analyzed for chlorinated compounds using Color-Tec groundwater test kits." Please provide more details on the sampling techniques that were used to collect the samples that were sent to the lab for analysis. As is, the RI describes the process in that 70% unpreserved samples were sent to the lab to be analyzed. EPA would be concerned with samples that were sent to the lab unpreserved at 70% capacity and analyzed for VOC due to the potential for volatilization

49. Tables 2.1 and 3.1, Vapors from Shallow Groundwater. This table incorrectly reports the data summary statistics since the data used to report the maximum detected and exposure point concentrations, (presented within Table 3.1, RME), can not be verified. According to footnotes "a and b" (within Table 3.1), shallow groundwater data sets were selected for the industrial and residential scenarios. Since this is the case, Table 2.1 should be divided and presented as such. In other words, Table 2.1 should be labeled, Table 2.1a which should contain all the data that was used for the shallow groundwater industrial scenario, Building 90. Table 2.1b should contain all the data that was used for the shallow groundwater industrial scenario Building 1556, Table 2.1c . . . Building 13, and so on until each exposure building scenario has its data set presented, separately, within Tables 2.1. In addition, Table 3.1 should report the maximum and exposure point concentrations in regards to the scenario that is being evaluated. The presented tables, Table 2.1 and 3.1, are confusing, difficult to follow, and does not properly present the data as it was used for the shallow groundwater vapor evaluation. Please revise these tables to reflect how the data was used in this assessment.

Once data sets have been appropriately segregated according to the building being evaluated, each data set must be approved by the site assigned Hydrogeologist to determine if the data sets are appropriate.

Please keep in mind, the current method of indoor air data evaluation (e.g., segregated according to industrial and residential building scenarios) primarily focuses on the current indoor air risk and not necessarily future exposures. For example, the current indoor air evaluations are based on a current "snap-shot" of the groundwater contamination plume and does not consider the plume moving (as groundwater does) causing concentrations to change base on groundwater movement. Therefore, EPA highly recommends residential evaluation for all potential "future" scenarios involving indoor vapor intrusion.

50. The inhalation toxicity values for TCE should be updated to include the USEPA recommended California EPA inhalation unit risk values of IUR of 2.06 $(mcg/m3)^{-1}$ and oral cancer slope factor of $0.013(mg/kg\text{-}day)^{-1}$. Please revise the RI to account for this.

51. Section 7.4.2, Risk Assessment Results, Current/Future Industrial Worker-Shallow Groundwater. The report indicates, "However, the modeled indoor air concentration for TCE, based on RME assumptions, is less than the Agency for Toxic Substances and Disease Registry (ATSDR) acute Minimal Risk Level . . ." Please keep in mind the ATSDR Minimal Risk Level is not an EPA acceptable benchmark regulatory criteria.

52. Table 3.1RME. The Exposure Point Concentrations could not be verified since the data